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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,661	08/27/2001	Masayoshi Suzuki	01FN017US	2498

466 7590 11/06/2003

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EXAMINER

RICHARDS, N DREW

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,661

Applicant(s)

SUZUKI ET AL.

Examiner

N. Drew Richards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 2, 4, 6-28, 30, 32 and 34-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 29, 31 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species IB1 in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant indicated that claims 1-6 and 29-50 read on the elected invention. Upon review of the claims, the Examiner has determined that claims 1, 3, 5, 29, 31 and 33 read on the elected species. Claim 2 and its dependents do not read on the elected species because claim 2 includes a three-prime-color cholesteric material layer instead of the quarter-wavelength plate and polarization plate. Claims 35 and 45 and their dependents do not read on the elected species because they include the liquid crystal layer having a positive dielectric anisotropy.

Claim Objections

2. Claim 5 is objected to because of the following informalities: Line 5 should read "said transparent electrodes" as more than one electrode is claimed by this phrase. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claim 1 recites the limitation "the light-incident direction" in line 4. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 1 recites the limitation "said first substrate side" in line 12. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 1 recites the limitation "said second substrate side" in lines 13-14. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 1 recites the limitation "the light-incident direction" in lines 15-16. There is insufficient antecedent basis for this limitation in the claim.

8. Claim 3 recites the limitation "the light-incident direction" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

9. As best understood, the claims are rejected over prior art as follows:

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

~~obviousness-rejections set forth in this Office action.~~

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art in view of Sonehara et al. ("A New Twisted Nematic ECB (TN-ECB) Mode for a Reflective Light Valve.").

Applicant's admitted prior art (hereafter referred to as "APA") teach a reflection liquid crystal display on page 6 lines 4-18 comprising:

- a first substrate;

- a second transparent substrate that is disposed forward to the light-incident direction so that it is opposed to the first substrate;

- a color filtering layer consisting of a liquid crystal layer placed between the first substrate and second substrate, and a cholesteric material layer secured between the first substrate and the liquid crystal layer;

- an optical absorbing layer provided rearward of the color filtering layer in the light-incident direction at the first substrate side;

- a phase plate secured at the second substrate side

- and a polarization plate disposed further forward in the light-incident direction than the phase plate.

APA does not teach the phase plate being a quarter-wavelength plate. Sonehara et al. teach a reflective LCD. Sonehara et al. teach forming a phase plate as a quarter-wavelength plate above the second substrate.

APA and Sonehara et al. are combinable because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to form the phase plate as a quarter-wavelength plate. The

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motivation for doing so is to enable switching of reflected light. Therefore, it would have been obvious to combine APA with Sonehara et al. to obtain the invention of claim 1.

With regard to claim 31, APA with Sonehara et al. do not explicitly teach the liquid crystal layer having a negative dielectric anisotropy and the molecules being oriented in a direction orthogonal to the first and second substrates when no voltage is applied. However, this limitation is considered obvious to one of ordinary skill in the art at the time of the invention. One of ordinary skill in the art would have known to form the liquid crystal layer with negative dielectric anisotropy and the molecules oriented in a direction orthogonal to the first and second substrates when no voltage is applied to reduce light leakage when a pixel is in the off-state.

With regard to claim 33, APA with Sonehara et al. do not explicitly teach the liquid crystal layer having a pre-tilt angle in advance in a direction along which the liquid crystal molecules are shifted down when voltage is applied. However, this limitation is considered obvious to one of ordinary skill in the art at the time of the invention. One of ordinary skill in the art would have known to form the liquid crystal layer with a pre-tilt angle in advance in a direction along which the liquid crystal molecules are shifted down when voltage is applied to allow for quicker response time and faster switching speeds.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior with Sonehara et al. as applied to claim 1, and further in view of Kaneko (U.S. Patent No. 6,295,108 B1).

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APA with Sonehara et al. teach all the limitations of claim 1 but do not teach a scattering layer for scattering light forward to the polarization plate in the light-incident direction. Kaneko teach a reflection LCD in figure 1, for example. Kaneko teach forming a scattering layer 15 for scattering light forward to a polarization film 8 in the light-incident direction.

APA with Sonehara et al. and Kaneko are combinable because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to form a scattering film on the device. The motivation for doing so is to provide a good viewing angle. Therefore, it would have been obvious to combine APA and Sonehara et al. with Kaneko to obtain the invention of claim 3.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior with Sonehara et al. and Kaneko, as applied to claim 3, and further in view of Homma et al. (U.S. Patent No. 6,226,461 B1).

APA with Sonehara and Kaneko teach all the limitations of claim 3 but do not further teach the claimed details of the scattering layer. Homma et al. teach a macromolecular liquid crystal element as a diffusion plate (scattering layer) including two transparent electrodes 43,44 opposed to each other and a macromolecular dispersion liquid crystal layer 40 placed between the transparent electrodes wherein transmission and scattering of the macromolecular dispersion liquid crystal layer are switched by applying voltage to the macromolecular dispersion liquid crystal layer as seen in figure 2.

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APA with Sonehara et al. and Kaneko are combinable with Homma et al. because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to form the scattering layer of a macromolecular dispersion liquid crystal layer between two electrodes. The motivation for doing so is to allow simple regulation of diffusivity. Therefore, it would have been obvious to combine APA and Sonehara et al. and Kaneko with Homma et al. to obtain the invention of claim 5.

14. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior with Sonehara et al. as applied to claim 1, and further in view of Kubota et al. (U.S. Patent No. 6,551,667 B2).

APA with Sonehara teach all the limitations of claim 1 but do not teach the liquid crystal layer including a macromolecular organic compound. Kubota et al. teach a reflection liquid crystal display wherein the liquid crystal material includes a macromolecular organic compound.

APA with Sonehara et al. and Kubota et al. are combinable because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to form the liquid crystal layer to include a macromolecular organic compound. The motivation for doing so is to allow formation of a device with improved optical hysteresis. Therefore, it would have been obvious to combine APA and Sonehara et al. with Kubota et al. to obtain the invention of claim 29.

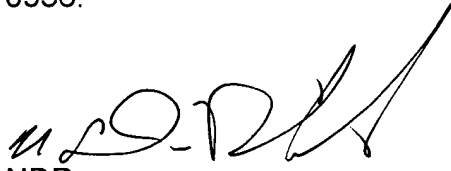
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Conclusion

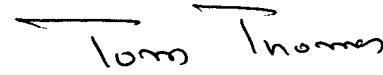
Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (703) 306-5946. The examiner can normally be reached on M-F 8:00-5:30; Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



NDR



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